

WHAT IS CLAIMED IS:

1. DNA encoding an *Ehrlichia canis* immunoreactive surface protein p153, said DNA is selected from the group
5 consisting of:

(a) isolated DNA which encodes a p153 protein having the amino acid sequence of SEQ ID NO: 2; and

(b) isolated DNA encoding said protein, wherein the sequence of said DNA differs from the isolated DNA of (a) in codon
10 sequence due to the degeneracy of the genetic code.

2. A vector comprising the DNA of claim 1 and regulatory elements necessary for expression of the DNA in a cell.

15

3. The vector of claim 2, wherein said DNA encodes a p153 protein having the amino acid sequence shown in SEQ ID No:
2.

20

4. A host cell transfected with the vector of claim 2, said vector encodes a p153 protein having the amino acid sequence shown in SEQ ID No: 2.

5

5. The host cell of claim 4, wherein said cell is selected from group consisting of bacterial cells, mammalian cells, plant cells and insect cells.

10

6. Isolated and purified *Ehrlichia canis* immunoreactive surface protein p153 encoded for by DNA selected from the group consisting of:

(a) isolated DNA which encodes a p153 protein having the amino acid sequence shown in SEQ ID No: 2; and

(b) isolated DNA differing from the isolated DNA of (a) in codon sequence due to the degeneracy of the genetic code.

7. DNA encoding an *Ehrlichia chaffeensis* immunoreactive surface protein p156, said DNA is selected from the group consisting of:

(a) isolated DNA which encodes a p156 protein having
5 the amino acid sequence of SEQ ID NO: 1; and

(b) isolated DNA encoding said protein, wherein the sequence of said DNA differs from the isolated DNA of (a) in codon sequence due to the degeneracy of the genetic code.

10

8. A vector comprising the DNA of claim 7 and regulatory elements necessary for expression of the DNA in a cell.

15

9. The vector of claim 8, wherein said DNA encodes a p156 protein having the amino acid sequence shown in SEQ ID No: 1.

10. A host cell transfected with the vector of claim 8, said vector encodes a p156 protein having the amino acid sequence shown in SEQ ID No: 1.

5

11. The host cell of claim 10, wherein said cell is selected from group consisting of bacterial cells, mammalian cells, plant cells and insect cells.

10

12. Isolated and purified *Ehrlichia chaffeensis* immunoreactive surface protein p156 encoded for by DNA selected from the group consisting of:

(a) isolated DNA which encodes a p156 protein having the amino acid sequence shown in SEQ ID No: 1; and

(b) isolated DNA differing from the isolated DNA of (a) in codon sequence due to the degeneracy of the genetic code.

20

13. An antibody directed against the p153 protein of claim 6.

14. An antibody directed against the p156 protein of claim 12.

5

15. A vaccine against canine ehrlichiosis comprising the p153 protein of claim 6.

10

16. A vaccine against canine ehrlichiosis comprising the p156 protein of claim 12.

15

17. A method of determining whether a dog is infected with an *Ehrlichia* species, comprising the step of:

determining whether serum from said dog reacts with *E. canis* p153 protein or *E. chaffeensis* p156 protein, wherein reaction with the p153 protein or the p156 protein indicates said dog is infected with *Ehrlichia canis* and *Ehrlichia chaffeensis*, respectively.

20

18. The method of claim 17, wherein said protein is a recombinant protein.

5 19. The method of claim 17, wherein western blot analysis is used to determine whether the serum of said dog reacts with said protein.

10 20. The method of claim 17, further comprising the step of determining whether the serum from said dog reacts with *E. canis* p28 protein, wherein immunoreactivity to both the p153 and p28 proteins indicates said dog is infected with *Ehrlichia canis*.

15 21. A serodiagnostic kit for determining whether a dog is infected with an *Ehrlichia* species, said kit comprising:

 a) one or more immobilized *Ehrlichia* antigens selected from the group consisting of p153, p43, p156 and p28;

20 b) appropriate dilution buffers for dog serum;

c) an anti-dog serum second antibody linked to a reporter molecule; and,

d) appropriate reagents for detection of said reporter molecule.

5

22. The kit of claim 21 wherein said *Ehrlichia* antigens are immobilized on a membrane or a microtiter plate.

10

23. The kit of claim 21, wherein said reporter molecule is selected from the group consisting of luciferase, horseradish peroxidase, β -galactosidase, and fluorescent labels.

15

24. A method of determining whether a dog has been infected with an *Ehrlichia* species, comprising the steps of:

extracting DNA from the blood of said dog; and

performing PCR amplification on said DNA with

20 oligonucleotide primers specific for the *E. canis p153* gene or the *E. chaffeensis p156* gene;

separating the resulting PCR product by size, wherein positive detection of an appropriately sized amplification product indicates infection with *E. canis* or *E. chaffeensis*.

5

25. The method of claim 24, wherein said PCR product is detected by gel electrophoresis.

10

26. A kit for determining whether a dog is infected with an *Ehrlichia* species, said kit comprising:

- a) reagents for DNA extraction from blood;
- b) *p153*-specific or *p156*-specific oligonucleotides;

and,

15

- c) reagents for PCR amplification.